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Development of novel nanocomposites based on multi walled carbon nanotubes (MWCNT) has recieved a substantial amount of attention during recent years. It is of general belief that functionalization of the nanofiller improves dispersion and by effect should improve the mechanical properties of the composite. Such functionalizations are often performed with large amounts of solvents and requires long reaction times. In addition to this, many of the used methods involve an oxidative purification, which is known to cause defects and degradation of the MWCNT[1,2].

As an alternative, a novel nonoxidative radical method applying azobis type initiators has been developed. The method facilitates functionalization of gram scale amounts in 5-10 minutes without the use of solvents. The method has been applied for preparation of acid and amine functional MWCNT. Subsequent postfunctionalization with different compatibilizers for polypropylene has been performed to obtain polypropylene (PP) compatible MWCNT. The functionalized materials have been applied in PP nanocomposites, where effects of the different modifiers have been probed.

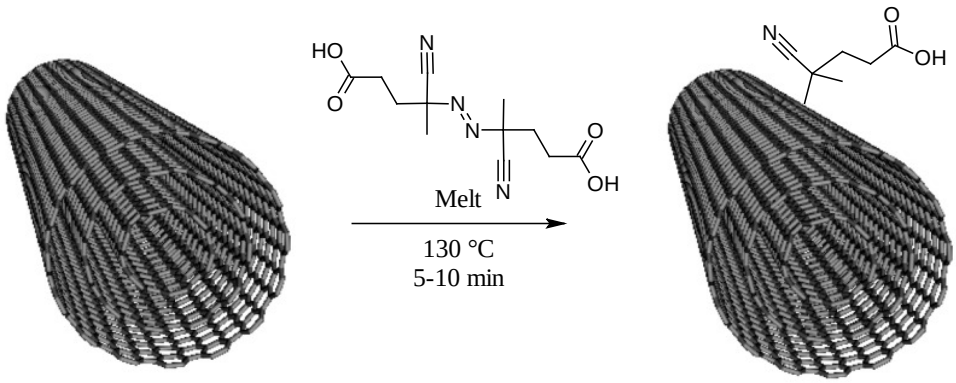

Figure 1: Solvent free funcationalization of MWCNT with azobis type initiators

References

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